**Trimming the 8 channel Quantizer module (revised)**

**SETUP:**
**IMPORTANT: All 8 inputs must be connected together and the Track&Hold/ S&H switch must be in Track & Hold mode.**
Connect all 8 inputs together
Set Ch 8 gain to full positive gain
Set Ch 8 bias to center.
Ground the wiper (center lug) of the Channel 8 bias pot or set the wiper to read as close to 0.000 volts as possible (Grounding the wiper will give the best results, but be careful not to short other pins to ground as they are the pos & neg supply).

**TRIMMING:**

**1.** *(STEP 1 will insure that 0 volts at the input will be equal to 0 volts at the output. It adjusts for any offset voltage at the D/A converter output.)*

With all inputs connected together GROUND the inputs.
Adjust the OFFSET NULL Trimmer on the digital board so that the Test point "TP:1v/oct" is 0.000 volts.

**2.** *(STEP 2 checks the output of the 8 output channel sample and hold amplifiers. Each output can be trimmed individually by installing its trimmer and 4.7meg resistor as described below in "additional setup options")*

Check all 8 outputs, they should all be close to 0.000 volts. If any are far off swap the TL047 chip that is outputting the bad reading, or see "ADDITIONAL SETUP OPTIONS" below. Make note of any offset voltages, they need to be added to the calibration voltage outputs in step 7.

*(STEPS 3-5 adjust the input circuit gain. Proper adjustment will insure 7 volts out for an input of 7 volts)*

**3.** Short the jumper pins on the CALIBRATE header on the DIGITAL BOARD with the shorting block. Adjust the 1V/OCT TRIM so that output 7 is 7.000 Volts

**4.** Remove the ground connection to the inputs. With all inputs still connected together, attach all INPUTS to OUTPUT 7. Confirm that the gain of input CH8 is still full positive and that the BIAS control is at 12:00 (0 volts).

**5.** Measure the voltage at TP:Input Scale Trim and adjust the SCALE TRIM so that the TP:Input Scale Trim = 3.318 Volts

*(The input circuitry is now calibrated. You no longer need to monitor TP:Input Scale Trim.)*

**6.** You can disconnect all the plugs at the inputs now if you like.

**7.** *(STEP 7 calibrates the outputs for 1v/octave)*

Go back and adjust the 1V/OCT trimmer, if needed, checking outputs 2-8. Trim 1v/OCT so all the outputs are as close to the values below as possible. Any offsets at the outputs noted in step 2 need to be added to the readings. For example, if OUT 3 had an offset of.0023 volts in step 2, then when properly calibrated it should read 2.0023.

*(There is a certain amount of non-linearity that will always be present. I've found the best compromise is achieved by having output 7 (7.000 Volts) as spot on as possible.)*

OUT 1= 0.000
OUT 2= 1.000
OUT 3= 2.000
OUT 4= 3.000
OUT 5= 4.000
OUT 6= 5.000
OUT 7= 7.000
OUT 8= 10.000

**8.** Remove the shoring block from the CALIBRATE switch (store it on 1 of the pins for later use).

**9.** You're done.

**ADDITIONAL SETUP OPTIONS:**
Space is available on the Analog Board for trimming the offset null of each individual output. If one output is far off when outputting Zero volts a 100k multi-turn trimmer and a 4.7 meg resistor can be fitted to the channels op amp. With the input grounded, trim the offset null to 0.000 volts.

If fitting individual offset null trimmers zero the outputs (after step 1) and then repeat the rest of the calibration procedure.